Remarks

Applicants have read and considered the Office Action dated August 28, 2002. Claims 1, 4, 16, 27 and 30 are amended. In addition, Applicants' Representatives discussed claims 1 and 30 and the Umeyama et al. reference during an interview with Examiner Shawn An on January 30, 2003. Applicants' Representatives thank Examiner An for the courtesy extended during the interview. Claims 1- 40 are pending.

The drawings were objected to because they do not include the reference sign 230 of Figure 2, mentioned in the description. Formal drawings were submitted on June 13, 2001. The formal drawings show a movement detector that includes reference numeral 230 and Applicants assert that the objection to the drawings is traversed.

In the Office Action, claims 1-40 were rejected under 35 U.S.C. § 103 based on the cited art.

Claims 1, 3, 6-7, 9-10, 14 and 30-32 were rejected as being unpatentable over Umeyama et al. It is respectfully submitted that the claimed invention is patentable over the cited art. Regarding claims 1, 9 and 30, the Examiner wrote that since Umeyama's processing unit controls focusing, it would have been obvious for the processing unit to select portions of the stereoscopic images for producing a visually stable sequence of display images.

The disclosed technique as claimed in claims 1 and 30 of the application, is directed at the processing unit selecting portions of the images, thereby producing a visually stable sequence of display images. The image portions are selected according to a signal from the movement detector. Selecting these portions of the acquired images is a part of the image processing stage of the technique disclosed in the application.

Umeyama discloses a stereoscopic device wherein a controller controls mechanical focus properties of the system. It is noted that controlling the focus properties of the system is basically a mechanical procedure that is not part of the image processing stage of the technique according to Umeyama. Rather, controlling the focus properties is a part of the image acquiring stage. Umeyama neither teaches nor suggests correcting image vibrations by means of image processing that selects certain portions of an already acquired image, according to the movement detected by the sensors.

A system according to the disclosed technique includes a movement sensor, which essentially detects movement of the image sensor assembly perpendicular to the optical axis, (i.e., left, right, up and down - relative to the optical axis), as described in Figures 25, 26 and 27. By selecting portions of the acquired stereoscopic images, according to the detected movements

toward and away from the optical axis, the disclosed technique as **claimed** in claims 1 and 30 of the application, can compensate for vibrations.

In contrast, the technique according to Umeyama detects only axial movement of the optical system, using a linear encoder, back and forth along the optical axis and as a result, mechanically adjusts focal properties (i.e., focus). Umeyama does not teach nor does it suggest either detecting movement which is sideway from the optical axis or taking any action according to such relative perpendicular movement. Accordingly, Applicants assert that claims 1 and 30 should not be regarded as being anticipated by Umeyama. Moreover, the claims depending from claims 1 and 30 are also believed to distinguish over Umeyama.

Regarding claim 3, the Examiner stated that Umeyama discloses the processing unit being connected to the movement detector (417).

The disclosed technique of the device claimed in claim 3 of the application is directed to the processing unit comprising a processor that is coupled with the movement detector and further, a memory unit connected to the processor. It is noted that according to the disclosed technique, the processor operates according to signals received from the movement detector, which defines a flow of information in a direction from the movement detector to the processor.

With respect to Figure 60 of Umeyama, the processing unit (421) is not connected to the linear encoder (417). Rather, a first directional connector is directed from the processing unit (421) to the piezoelectric element controller (422), and a second directional connector is directed from the linear encoder (417) to the piezoelectric element controller (422). Umeyama does not teach or suggest the processor being connected to the linear encoder. In addition, Umeyama does not describe or teach a flow of information that is directed from the linear encoder toward the processing unit. Accordingly, Applicants assert that claim 3 is not anticipated by Umeyama.

The Examiner has rejected claims 4 and 26-28 as being unpatentable over Umeyama, in further view of McKenna. With respect to claims 4 and 26, the Examiner wrote that McKenna et al. teaches selecting sub-matrices from a plurality of sub-matrices. The Examiner further stated that it would therefore have been obvious to employ a stereoscopic device as taught by Umeyama et al to incorporate the concept of selecting a sub-matrices from a plurality of sub-matrice as taught by McKenna in order to focus on that particular area for displaying fine images.

The disclosed technique, as recited in claim 4 of the application, is directed at a stereoscopic device that provides a visually stable sequence of display images that includes a plurality of sub-matrices, each one of the sub-matrices selected from a respective one of the

detected stereoscopic images. Depending from claim 1, this stereoscopic device includes a lateral movement detector that is utilized to define which sub-matrixes are to be selected.

Umeyama discloses a stereoscopic device that includes a linear encoder, which acts as an axial movement detector, detecting back and forth movement along the optical axis. Umeyama does not suggest selecting sub-matrices from a plurality of sub-matrices.

McKenna discloses a method for providing a plurality of fields of view, while maintaining an initially established position of an endoscope. The endoscope according to McKenna includes a plurality of image capturing means (CCD), each adapted to capture an image within a predetermined field of view. An image processor is able to access at least one of the images generated by the image capturing means.

According to McKenna (Figures 11 and 12), the full captured image may be too large or too complex to be viewed all at once on the display. When this occurs, the operator may command the image processing means to display the output from only some of the CCD element's cells on the display. According to McKenna, sub-matrices are selected in order to view selected regions of interest, and not in order to compensate for image instability, as recited in claims 4 and 26-28 of the application.

McKenna does not disclose or suggest either stabilizing the vibrations of images by selecting portions of the images or the use of a movement sensor. Moreover, neither McKenna nor Umeyama discloses detecting or compensating for movement other than axial movement.

Employing a stereoscopic device as taught by Umeyama to incorporate the concept of selecting sub-matrices from a plurality of sub-matrices as taught by McKenna may provide a stereoscopic device that includes the axial movement detector (e.g., linear encoder) and the mechanical focus control of Umeyama and the image processing unit of McKenna. Such a system would acquire stereoscopic images with a mechanical focus control, and select sub-matrices from these images in order to view a specific region of interest.

However, even if the processing unit of McKenna was adapted to automatically select images, the movement signal provided by the linear encoder would not constitute useful information for this system to select images so as to produce a stable image when the imaging unit vibrates transversely. Accordingly, Applicants assert that claims 4 and 26 are not anticipated by Umeyama.

Claims 2, 5, 12-13 and 33-36 were rejected as being unpatentable over Umeyama et al. in view of Adelson. The Examiner states that Adelson shows conventional structure. However, the

combination of Umeyama et al. and Adelson neither teaches nor suggests the present invention, as stated above. Applicants assert that claims 2, 5, 12-13 and 33-36 are allowable for the reasons stated above, as well as the advantages provided by their recited structure in combination with the claims discussed above.

Claims 8 and 11 were rejected as being unpatentable over Umeyama et al. in view of Watannabe. Applicants assert that these claims are allowable as being dependent upon the claims discussed above, as well as other reasons.

Claims 15, 17-20, 23-25, 29 and 37 were rejected as being unpatentable over Umeyama et al. in view of Street. Applicants assert that these claims are allowable as being dependent upon the claims discussed above as well as other reasons.

Claims 16, 21-22 and 38-40 were rejected as being unpatentable over Umeyama et al. and Street in view of Watannabe. Applicants assert that these claims should be allowable as being dependent upon the claims discussed above as well as other reasons.

In view of the foregoing, entry and approval of these amendments and a speedy and favorable action are respectfully solicited. If the Examiner feels that a telephone interview may be helpful in this matter, please contact Applicants' Representative at 612.336.4728.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903
612/332-5300

Date: 2/4/03

Gregory A. Sebald
Reg. No. 33,280
GAS/krn